ATOMIC ENERGY newsletter®

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N. Y.

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Dear Sir:

British and U. S. nuclear power plants, compared from economic and technical standpoints, show considerable similarity in their projected capabilities according to a study made of power plants using the most advanced nuclear reactor types favored by the technologists of their respective countries. The recently released study, made for the USAEC by American Radiator-Standard Sanitary Corp., compared power costs of theoretical 90,000 KW plants of improved design (second generation) of the British Calder Hall-type with the USAEC-Duquesne Light Co.'s pressurized water reactor facility being built at Shippingport, Pa. If constructed in the U.S., Calder Hall-type plant would produce electrical energy for 17.9 mills/kwh., against 19.6 mills/kwh. for pressurized water units. With the lower construction costs and lower capital charges of Britain, construction in that country would enable Calder Hall-type plant to produce at 8 mills/kwh., against the pressurized water type at 13.1 mills/kwh. (Potential cost reductions are more possible with the pressurized water type than with the Calder Hall design, the study points out, since the conservative design of the PWR core may permit heat fluxes of 2 to 3 times the design values to be attained; Calder Hall is being operated near upper temperature limits of magnesium cladding and uranium. Of importance for commercial exploitation is the use of natural uranium by Calder Hall, and enriched uranium by the PWR, with the former being readily available from many sources while enriched uranium may be obtained only in the U.S. at present.) (Other REACTOR NEWS, p. 2 this LETTER.)

International Atomic Exposition and Nuclear Congress is now planned for Mar. 17-21, 1958 in Chicago. As in 1957, the Congress will be sponsored by U.S. engineering and scientific societies which are interested in the nuclear field. American Institute of Chemical Engineers will manage the meeting, and Engineers Joint Council will coordinate it. Inquiries on contributing papers should be made to EJC, 29 W. 39th St., New York 18.

Construction has been started by Gas-Ice Corp., Portland, Ore., on $300,000 plant near Finley, Wash. to manufacture liquid carbon dixoide and dry ice with output going to the USAEC's nearby Hanford Plutonium Works (operated by General Electric Co.). Firm expects to be in production by this July with the liquid carbon dioxide, and later this year with the solid material..... Under recent order placed by the Atomic Energy Ministry of W. Germany, with Pintsch Bamag AG, Butzbach/Hessen, that firm will do development work in heavy water production involving experiments in hydrogen sulfide/water exchange under pilot plant conditions. (Other BUSINESS NEWS, p. 2 this LETTER,)

Sales of Baird-Atomic, Inc., Cambridge, Mass., instrument firm were $3,174,254 for six months ended March 31st, 1957, the firm told stockholders in its semi-annual review. This was about 140% greater than combined sales of the two companies for the year earlier period; companies had merged June 1st, 1956. Early consolidation costs had affected the profit picture, the firm stated; net was down to $8,914.00 for the six months period. (Other FINANCIAL NEWS, p. 3 this LETTER.)

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ATOMIC ENERGY BUSINESS NEWS...

NUCLEAR POWER PLANT USING NATURAL URANIUM FUELED REACTOR PROPOSED:- Florida Nuclear Power Group, composed of three Florida electric utility companies, has now proposed to the USAEC the building of the first U.S. nuclear power plant using a water-moderated, natural uranium fueled, gas cooled reactor. (Proposal was made in response to the USAEC's offer of Jan. 7, 1957 offering certain assistance for nuclear power plants using such design concepts as are embodied in the FNPG reactor. Assistance takes the form of USAEC research and development help, and waiving of charges for fuel use for a 5-year period from time license is granted.) Estimated cost of the FNPG reactor is $40 million; capacity is to be 136,000 electrical KW. Making up the group are Florida Power Corp., St. Petersburg; Florida Power & Light Co., Miami; and Tampa Electric Co., Tampa. Reactor design, research and development work will be done by General Nuclear Engineering Co., Dunedin, Fla., headed by Walter H. Zinn, former director of the USAEC's Argonne National Laboratory. Dr. Zinn has advocated building power reactor of the gas-cooled, natural uranium type.

PLUTONIUM PRICE ESTABLISHED:- Buying prices for plutonium which the USAEC will pay operators of U. S. power and research reactors have now been established. Main reason is to set up net cost of electrical energy produced in power reactors; since plutonium is a by-product, Federal Power Commission and other bodies needed the cost for rate schedule making. Prices the USAEC will pay for the plutonium between now and July 1, 1962 will range from $30 to $45 per gram depending on the plutonium-240 content. For the year July 1, 1962--June 30, 1963 a single price of $30 per gram will be paid.

THIRD U.S. NUCLEAR REACTOR-POWERED SUBMARINE LAUNCHED:- The first production model of a nuclear reactor powered submarine, the Skate, was formally launched last week at Groton, Conn., in the Thames River, adjoining the yards of Electric Boat division of General Dynamics Corp., builder. Electric Boat and Bureau of Ships people feel that design can be frozen. Skate will therefore be the first of four such fleet-type craft; Westinghouse Electric Corp., designer and builder of the nuclear power plant for the Skate, has work underway on the nuclear power plants for the remaining three submarines of this class. The Skate reactor, of the pressurized water type, is similar in principle to that of the Nautilus, first nuclear powered submarine launched in the U.S. However, new concepts and advances in reactor design, based on improved reactor technology, were incorporated into the Skate reactor. (Construction work on the Skate nuclear power plant began in January, 1955, preceded by months of developmental work.) Meanwhile, a replacement nuclear core has been installed in the Nautilus; the original had been removed after the craft had travelled some 60,000 miles.

NUCLEAR REACTOR WITH AIRCRAFT APPLICATIONS DESCRIBED:- The possible prototype of a nuclear reactor which might be used for aircraft propulsion was described publicly for the first time last fortnight at the Inter-American Symposium on Peaceful Applications of Atomic Energy, held at Brookhaven National Laboratory, Upton, L. I. Alvin M. Weinberg, director of Oak Ridge National Laboratory, described this reactor. It uses a circulating fuel, consisting of a mixture of molten fluoride salts containing uranium-235 at extremely high temperatures, Dr. Weinberg stated. The high operating temperature (1,500 deg. F.) makes possible high efficiency in converting the reactor's heat into useable power; while the liquid fuel principle keeps costs to a minimum because it eliminates the necessity of refabricating the fuel, a periodic necessity with solid fuels.

AGREEMENT MADE TO DEVELOP NUCLEAR POWER PLANT:- Agreement has been entered into by Carolinas Virginia Nuclear Power Associates, and Westinghouse Electric Corp., to develop a nuclear power plant with completion date of 1962. Stone & Webster Engineering Corp., New York, and General Nuclear Engineering Co., Dunedin, Fla., are to be associated with Westinghouse on the engineering and development aspects of the project. Carolinas Virginia Nuclear Power Associates is composed of Carolina Power & Light Co., Virginia Electric & Power Co., Duke Power Co., and South Carolina Electric & Gas Co.

NEW TESTING REACTOR PLANNED BY INDUSTRIAL FIRM:- A new $4 million materials testing reactor will be constructed by General Electric Co. as a new facility for its Vallecitos (Calif.) atomic laboratory, Ralph D. Bennett, laboratory manager, said at dedication ceremonies of the laboratory last week. Dr. Bennett said the new reactor, which will produce 30,000 KW of heat energy, will be a light-water cooled and moderated reactor using fully-enriched uranium fuel.

ATOMIC ENERGY FINANCIAL NEWS...

FUND WITH NUCLEAR INVESTMENTS AT RECORD HIGH:- Energy Fund, New York, open-end investment company with holdings in companies whose activities are related to energy production, including the nuclear, had total net assets of $4,021,770 on May 15, 1957, the Fund manager (Ralph E. Samuel & Co.) has stated. Net asset value per share on May 15th was $178.18; this compares with $143.28 on Sept. 30, 1956. During this period, increase in shareholders brought number of shares outstanding to 22,572 against 18,001 at the beginning of the period.

INCREASE IN EARNINGS REPORTED BY COMPANIES WITH URANIUM MINING INTERESTS:- Earnings of Homestake Mining Co. in the first three months of 1957 were $883,000 or 44¢ a share, compared with $719,000 or 36¢ a share in the like period last year, the company's annual meeting last fortnight in San Francisco was told. The figures include earnings from the company's Utah uranium operations, although major portion was from gold mining..... Atlas Corp. expects to earn back its investment in uranium mining companies by the end of 1960, Floyd B. Odlum, president of the investment company told meeting in New York last fortnight of New York Society of Security Analysts. After these costs are earned back, he said, Atlas will receive substantial profits from the remainder of its presently known reserves without taking account of possible new discoveries or improved results. (Mr. Odlum was referring to the current appraised values of the company's uranium holdings. At the end of last year, Atlas had $41.5 million, or 38% of its total assets of $109 million in uranium mining and milling. Second largest investment was $18 million in oil and gas properties.) Mr. Odlum acknowledged that Delta Mine, Atlas's first big venture into uranium mining, purchased in August 1954 for $9 million, was virtually mined out; subsequent uranium mining purchases were more profitable, he noted.

NUCLEAR INSTRUMENT FIRM'S FINANCES DISCUSSED:- Proposal of Tracerlab, Inc., Mass. nuclear products firm, to increase the company's authorized capital stock to one million shares, from its presently authorized 700,000 shares was questioned at recent annual company meeting by William Barbour, former president and co-founder of the company and one of its largest shareholders. Mr. Barbour said that 100,000 or 150,000 shares should provide adequate capital and see Tracerlab through its present difficulties. He asked whether authorization of 300,000 shares, and sale of only part of that amount, might permit American Research & Development Co. (controlling stockholder) to "deal itself" stock at below market prices, apparently referring to purchase by AR&D of 25,454 shares at $5.50 a share, about $2 a share under the then prevailing market. Georges Doriot, president of AR&D, and Tracerlab director, said AR&D had supported Tracerlab for many years; further, that only other offer for stock was between $1 and $2 a share. Mr. Doriot also noted that Tracerlab had been turned down for a $400,000 loan by a state institution formed to aid small business. As to improving the earning picture at Tracerlab, Samuel S. Auchincloss, president since the beginning of this month, said an extensive survey is being made of the company's operations by "competent outside sources", and that corrective action will be taken on the basis of this survey.

CONTROL OF BRITISH NUCLEAR MATERIALS FIRM SHOWN:- British financial sources have noted that some 40% of the £140,000 ordinary capital (common stock) of Thorium, Ltd., is held by Howards and Sons, with Imperial Chemical Industries holding 50% of this ordinary. Only the £20,000 preference capital (preferred stock) has voting rights, however, and since Howards has a one-half share in this class it has equal say with ICI in the management. (Thorium, Ltd., is now supplying nuclear materials to the U.K. Atomic Energy Authority, and plans are underway to supply any larger potential demand which may result from the increase in commercial nuclear activities.)

ANALYSES AVAILABLE:- Brochure on Sabre-Pinon Corp., which claims to be the largest independent in the U.S. uranium mining field from the point of view of proven ore, has been issued by Clark, Landstreet & Kirkpatrick, Life & Casualty Tower, Nashville 3, Tenn.

SPENDING OF ATOMIC INDUSTRY TO REACH $500 MILLION IN 1957:- More than $500 million will be spent this year in the U.S. on construction of nuclear reactors, for uranium mining and milling, on instrument manufacture, and on research, Lewis L. Strauss, chairman of the USAEC, told the first general session of the Iron & Steel Institute's annual meeting in New York last fortnight. He broke down the expenditures in this manner: Construction of civilian power and military reactors, $270 million; uranium mining and milling, $200 million; instrument manufacture, $33 million; and nuclear research (excepting power reactor research) $25 million.

CONTRACTS AWARDED, BIDS ASKED...on nuclear jobs...

BIDS ASKED:- Bids have been asked by the USAEC, Idaho Falls, Idaho, for construction of the special power excursion reactor test facility at the USAEC's national reactor testing station, Idaho Falls, Idaho. Job is expected to cost about $1,300,000. Inquiries should mention covering contract, no. AT(10-1)-887.

CONTRACTS AWARDED:- Westinghouse Electric Corp., Pittsburgh, will supply electrical equipment for the 30 billion electron-volt synchrotron to be built at Brookhaven National Laboratory, Upton, L.I. Totaling approximately $1 million, the power supply will consist of ignitron rectifiers, switchgear and controls, and a 27,500 KW motor generator set with a 47-ton flywheel. Delivery is scheduled for the latter part of next year.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear subjects...

Labor Relations in the Atomic Energy Field. Report of the National Industrial Conference Board. --NICB, 460 Park Ave., New York, N.Y. ($1.50)

Bibliography of Zirconium, by E. Abshire. Result of cooperative project of Bureau of Ships (USN), and Bureau of Mines. Inf. circular No. 7771. 281 pages. --Publications Dist. Sect., U.S. Bureau of Mines, Forbes St., Pittsburgh, Pa. (free)

Ground Zirconium Metal Powder Pilot Plant. Report on developing, designing, and operating pilot plant to produce fused zirconium powder. Work done by Foote Mineral Co. under contract of U.S. Army's Frankfort Arsenal, in 1952. --Library of Congress, Wash. 25, D. C. (Microfilm, $3.30; photostat, $7.80).

Applications & Properties of Zirconium & its Alloys. Bibliography, prepared by J. W. Blanton. 7-pages. --Columbia-National Corp., 70 Memorial Dr., Cambridge, 42, Mass. (free)

Leak Detection in Water Mains Using Radioisotopes. Work done at Atomic Energy Research Establishment, Harwell. --British Inf. Services, 30 Rockefeller Plaza, New York (91¢)

Effects of High-Intensity X-irradiation of the Retina. Study made on laboratory animals by School of Aviation Medicine, U.S. Air Force, Randolph Field, Texas. 10 pages. No. PB-124602. --Library of Congress, Wash. 25, D.C. (Microfilm, $1.80; photostat, $1.80)

Radiation: What It Is and How It Affects You, by Jack Schubert and Ralph E. Lapp. A popularized discussion of problems created by radioactive fall-out and other exposure to ionizing radiations. 314 pages. --Viking Press, 625 Madison Ave., New York, N.Y. ($3.95)

NOTES:- Two translations recently made from the Russian: An Efficient Detector of Fast Neutrons, and A Radioactive Ionization Pressure Gage, are available from the translators, Associated Technical Services, P.O. Box 271, E. Orange, N.J. The material comes from 1956 Russian technical journals.

ATOMIC ENERGY PATENT DIGEST...recent grants...

PATENT GRANTS TO INDIVIDUALS OR PRIVATE ORGANIZATIONS:- Method for refining titanium, zirconium, cerium, hafnium, and thorium. U. S. Pat. No. 2,793,106 issued May 21, 1957; assigned to Barium Steel Corp., New York, N.Y. (Application date: June 15, 1954.) (Inventors: S. T. Jazwinski, J. A. Sisto.)

Method of separating zirconium and hafnium when one is present in combination with the other in a metal. U. S. Pat. No. 2,793,107 issued May 21, 1957; assigned to Barium Steel Corp., New York, N.Y. (Application date: June 15, 1954.) (Inventors: S. T. Jazwinski, J. A. Sisto.)

Rotational radiation therapy system and unit. U. S. Pat. No. 2,793,296 issued May 21, 1957 to O. S. Peterson, Jr., Burlington, Vt. (Application date: Dec. 12, 1952.)

Radiation dosimeter. U. S. Pat. No. 2,793,207 issued May 21, 1957; assigned to Bendix Aviation Corp., Detroit, Mich. (Application date: April 17, 1953.) (Inventors: C. R. Siebentritt, Jr., J. B. Byer, B. L. Allison, Jr.)

Quartz fiber dosimeter. U. S. Pat. No. 2,793,298 issued May 21, 1957 to O. G. Landsverk, Glendale, Calif. (Application date: July 6, 1954.)

PATENT GRANTS TO GOVERNMENTAL ORGANIZATIONS:- Recovery of ruthenium from aqueous solutions. U. S. Pat. No. 2,792,412 issued May 14, 1957; assigned to United States of America (USAEC). (Application date: Mar. 4, 1954.) (Inventors: H. R. Schmidt, R. L. Moore.)

Timing circuit. U. S. Pat. No. 2,792,535 issued May 14, 1957; assigned to United States of America (USAEC). (Application date: Aug. 27, 1953.) (Inventor: W. C. Struven.)

NEW PRODUCTS, PROCESSES, INSTRUMENTS...for nuclear lab & plant...

NEW PRODUCTS FROM MANUFACTURERS:- New thin window flow counter for low energy beta emitters, model TGC-14, is a carbon counter said to have high efficiency and an unusually low background. Instrument has small sensitive volume, large window area, and an ultra-thin mylar window. --Tracerlab, Inc., Waltham, Mass.

PRODUCT NEWS OF U.S. MANUFACTURERS:- Technical products division, which has been established at Mine Safety Appliances Co., Pittsburgh, Pa., will handle engineering, manufacturing and sales of this firm's Ultra-Aire space filters and its process control and other instruments and equipment. The Ultra-Aire space filter finds applications in removal of air borne radioactive particles from air streams.

New instruments or improved types have been developed by Edgerton, Germeshausen & Grier, Inc., for recording and measuring effects of the detonations of nuclear devices during this Summer series of tests at the USAEC's test site near Las Vegas, Nevada. Under a prime USAEC contract, the Boston, Mass., firm has been working with the nuclear weapons laboratories at Los Alamos, N.M., Livermore, Calif., and Albuquerque, N.M.

PRODUCT NEWS OF BRITISH MANUFACTURERS:- Nuclear Energy Trade Associations' Conference is now promoting a drive to increase British exports of nuclear power stations, research reactors, nuclear ore processing plants, and nuclear instrumentation. Membership of the organization comprises the foremost British manufacturer's associations in the chemical plant, electrical, scientific apparatus, aircraft and other industries. Headquarters of the new organization are at 32 Victoria St., London SW1.

Products for nuclear applications were among those shown at the recent (May 7-17) Instruments, Electronics and Automation Exhibition held in London. Baldwin Instrument Co., Ltd., Dartford, Kent showed a nucleonic level indicator. Protective glass (i.e. heavily leaded glass) in block and polished plate forms was exhibited by Chance-Pilkington Optical Works. Fluid density gamma gauge as well as other nucleonic and electronic equipment was shown by Ekco Electronics Ltd., Southend-on-Sea. Full instrumentation for a nuclear power station was displayed by Elliott Brothers (London) Ltd., Borehamwood, Herts. Shown by General Radiological Ltd., 15-18 Clipstone St., London, W1, were this firm's gamma ionization chambers, and a dosimeter charging unit, the latter a pocket size instrument designed to charge pocket quartz fiber dosimeters of all British and U.S. manufacture. A fire alarm device using an ionization chamber as the sensing element was shown by Minerva Detection Co., Ltd., Lower Mortlake Rd., Richmond, Surrey.

MANUFACTURERS' & OTHER LITERATURE:- Profiting from Radioisotopes is a reprint of article from Battelle Technical Review, May, 1957, written by Meyer Pobereskin and governing applications of radioisotopes to technical and industrial problems. Available from Battelle Institute, 505 King Ave., Columbus, Ohio.

Catalog covering fume hoods useful for handling radioisotopes is available from Kewaunee Mfg. Co., Adrian, Mich. ..... Beta gauges are covered in Tracerlab, Inc., Waltham, Mass., new catalog.

The synthesis of amino acids from ammonium carbonate, by the use of radiation, has been accomplished by a General Mills research group; report of the work is in Science, May 3, 1957.

EXPORT & CONSTRUCTION PERMITS & LICENSES...other licensee news...

CONSTRUCTION PERMITS:- Permit has been issued Martin Co., Baltimore, by USAEC, for construction of nuclear experiment facility at Middle River, Md.

EXPORT LICENSES:- License has been issued ACF Industries, Inc., New York, for export of a research reactor to Italian National Committee for Nuclear Research. Estimated cost of the 5,000 KW (heat) research reactor is $1.246 million.

LICENSEE REPORTS:- Radiation protection regulations (10 CFR 20) have been amended by the USAEC to require prompt reports from licensees of incidents involving appreciable release of licensed radioactive material, excessive exposure of individuals, and loss or theft of materials. Action followed month's delay by M. W. Kellogg Co., S. Houston, Tex., in reporting radiation accident (this LETTER, V. 17, No. 7, p. 1).

Sincerely,

The Staff,
ATOMIC ENERGY NEWSLETTER

May 28th, 1957